

SEQUENCE OF OPERATION FOR CV/RH BOX:

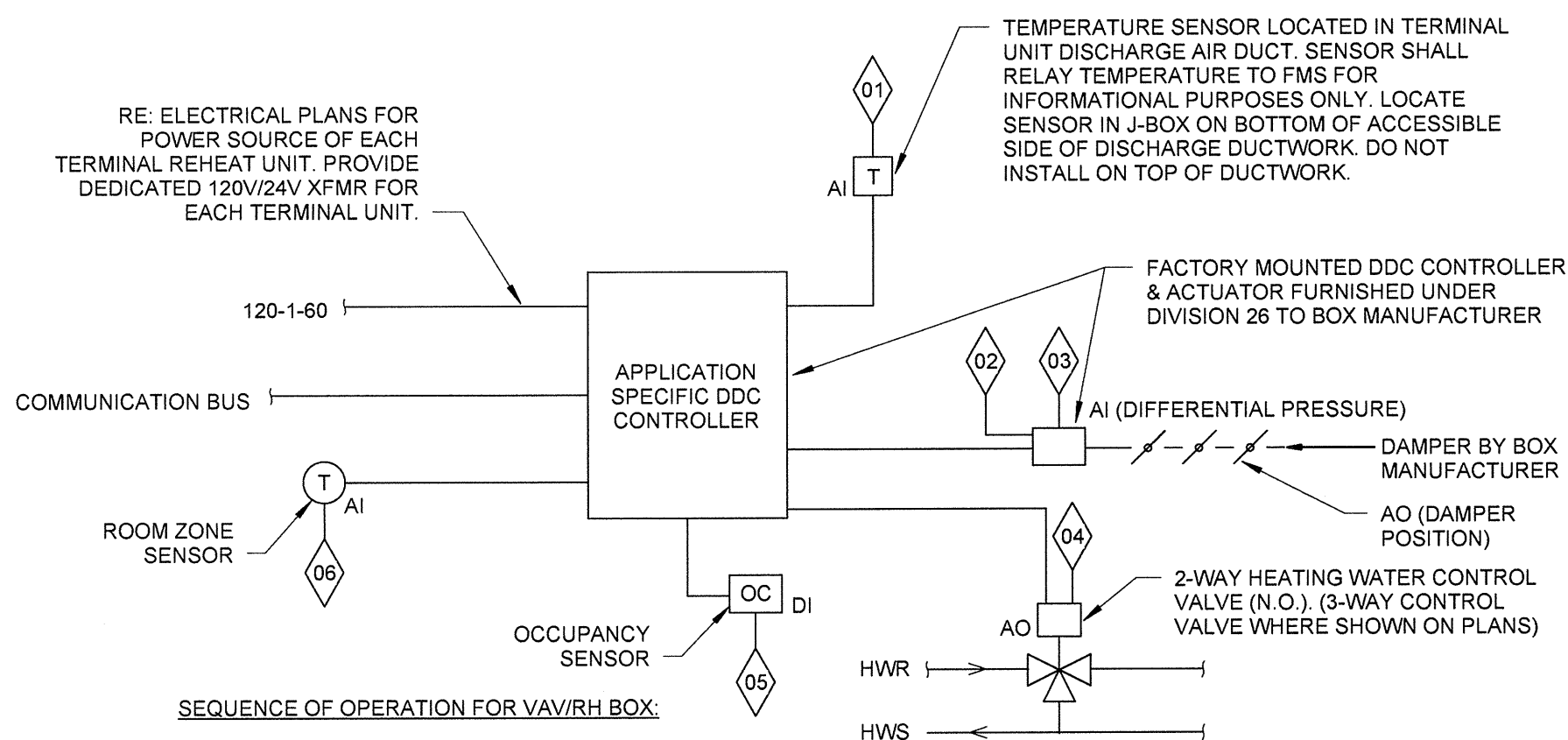
OCCUPIED:
ZONE TEMPERATURE CONTROLLED BY ROOM THERMOSTAT WITH OCCUPANT ADJUSTMENT OF +/- 4°. THE TERMINAL UNIT SHALL MAINTAIN ITS DESIGN AIRFLOW AT ALL TIMES. THE REHEAT HOT WATER VALVE SHALL BE MODULATED AS REQUIRED TO MAINTAIN THE ROOM TEMPERATURE SETPOINT. PROVIDE 2-WAY HEATING WATER CONTROL VALVE UNLESS NOTED OTHERWISE.

UNOCCUPIED:
EACH ATU WILL HAVE AN INDIVIDUAL OCCUPIED/UNOCCUPIED SCHEDULE. TERMINAL UNIT SHALL MAINTAIN CONSTANT AIRFLOW AT ALL TIMES. DURING UNOCCUPIED PERIOD, THE ROOM TEMPERATURE SETPOINT SHALL BE CAPABLE OF ADJUSTMENT TO A LOWER OR HIGHER VALUE. COORDINATE DESIRED SETPOINT WITH FIELD ENGINEER.

02 DDC CONSTANT VOLUME REHEAT BOX CONTROL SEQUENCE

- ### HVAC CONTROLS GENERAL NOTES
- PROVIDE ROOM BY ROOM FLOOR PLAN DRAWINGS WITH ACTUAL ROOM NAME AND NUMBERS FOR EACH AREA/ZONE, SHOW EACH THERMOSTAT AND BY CLICKING ON THE THERMOSTAT READ THE SETPOINT AND SPACE TEMPERATURE.
 - SHOW EACH TERMINAL UNIT ON THE FLOOR PLAN WITH DESIGNATION. CLICKING ON THE TERMINAL UNIT WILL SHOW DAMPER POSITION, REHEAT COIL VALVE POSITION STATUS, SUPPLY CFM, UNIT SETPOINT AND SPACE TEMPERATURE.
 - SHOW ALL EQUIPMENT IN MECHANICAL ROOMS AND AS ELSE WHERE LOCATED. CLICKING ON THE EQUIPMENT WILL SHOW A GRAPHIC OF THE SYSTEM WITH ALL CONTROL POINTS AS SHOWN IN THE DOCUMENTS.
 - EACH THERMOSTAT WILL BE LABELED WITH TERMINAL UNIT DESCRIPTION.
 - CONTROL POINTS AND SEQUENCES SHOWN SHALL BE FULLY INTEGRATED INTO THE EXISTING JOHNSON CONTROLS, INC. ALL DEVICES REQD. FOR FULL INTEGRATION SHALL BE PROVIDED, INSTALLED, PROGRAMMED, AND TESTED. RE: SPECIFICATION SECTION 230923.
 - DEMOLISHED EQUIPMENT SHALL BE FULLY REMOVED FROM THE EXISTING FMS INCLUDING SEQUENCES AND GRAPHICS. UNUSED PNEUMATIC TUBING SHALL BE REMOVED IN ITS ENTIRETY BACK TO THE MAIN AIR LINES. UNUSED TEES AND BRANCHES SHALL BE REPLACED WITH A UNION FITTING IN LIEU OF CAPPING.

CONTROL LEGEND	
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
CCT	CONTROL CIRCUIT TRANSFORMER
FA	FIRE ALARM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
TOL	THERMAL OVERLOAD
DDC	DIRECT DIGITAL CONTROL
ATC	AUTOMATIC TEMPERATURE CONTROL
AFMS	AIR FLOW MEASURING STATION
FMS	FACILITY MANAGEMENT SYSTEM



SEQUENCE OF OPERATION FOR VAV/RH BOX:

OCCUPIED:
ZONE TEMPERATURE CONTROLLED BY ROOM THERMOSTAT WITH OCCUPANT ADJUSTMENT OF +/- 4°. WHEN THE ZONE TEMPERATURE IS BETWEEN THE HEATING AND COOLING SET POINTS AIRFLOW IS AT MINIMUM AND THE HEATING VALVE IS CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE ZONE COOLING SET POINT, THE PRIMARY AIR DAMPER MODULATES OPEN TO INCREASE THE AIRFLOW. ON A FALL IN ZONE TEMPERATURE BELOW THE ZONE HEATING SET POINT, THE PRIMARY AIR DAMPER MODULATES TO MINIMUM AIRFLOW AND THE REHEAT HOT WATER VALVE MODULATES OPEN PROVIDING 95° LEAVING AIR TEMPERATURE. THE PRIMARY AIR DAMPER MODULATES BETWEEN MINIMUM AND MAXIMUM AIRFLOW.

UNOCCUPIED:
EACH ATU WILL HAVE AN INDIVIDUAL OCCUPIED/UNOCCUPIED SCHEDULE. WHEN THE ZONE TEMPERATURE IS BETWEEN THE HEATING AND COOLING UNOCCUPIED SET POINTS THE PRIMARY AIR DAMPER IS CLOSED AND THE HEATING VALVE IS CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE ZONE UNOCCUPIED COOLING SET POINT, THE AIR HANDLING UNIT IS INDEXED TO START, AND THE PRIMARY AIR DAMPER OPENS TO INCREASE THE AIRFLOW. ON A FALL IN ZONE TEMPERATURE BELOW THE ZONE UNOCCUPIED HEATING SET POINT, THE AIR HANDLING UNIT IS INDEXED TO START, AND THE PRIMARY AIR DAMPER MODULATES TO MINIMUM AIRFLOW AND THE REHEAT HOT WATER VALVE MODULATES OPEN PROVIDING A MAXIMUM 95° LEAVING AIR TEMPERATURE.

01 DDC VARIABLE VOLUME REHEAT BOX CONTROL SEQUENCE

CONTROL SYMBOLS	
N.C. N.O.	AIR SWITCHING VALVE
	AIR FLOW MEASURING STATION (AFMS)
	BULB SENSOR
H. O. A.	HAND-OFF-AUTO SWITCH
	MANUAL MOTOR STARTER W/THERMAL OVERLOAD
	PILOT LIGHT ON STARTER COVER
FS	FIRESTAT
FRZ	FREEZESTAT
N.C. N.O.	NORMALLY CLOSED AUX. CONTACTOR NORMALLY OPEN AUX. CONTACTOR
(S/S) OR	START STOP PUSH BUTTON (SSPB)
OFF ON	ON-OFF SWITCH
	TOGGLE SWITCH
	DOUBLE POLE SINGLE THROW SWITCH
P.	WATER PUMP
	GAUGE SYMBOL
C	RECEIVER/ CONTROLLER
DP	DIFFERENTIAL PRESSURE SENSOR OR CONTROLLER
SP	STATIC PRESSURE SENSOR OR CONTROLLER
P	PRESSURE SENSOR OR CONTROLLER
FL	FLOW METER/TRANSMITTER
LL	FREEZESTAT
FS	FLOW SWITCH
H	HUMIDITY SENSOR OR CONTROLLER
(H)	SPACE HUMIDISTAT
HL	HIGH LIMIT SENSOR OR CONTROLLER
	PILOT LIGHT
	THERMAL OVERLOAD
(CR)	CURRENT SENSING RELAY
(M) 20	20 PSI MAIN AIR
(C)	CONTACT
(HC)	HOLDING COIL
(M)	MOTOR
(PB)	PUSH BUTTON
(B)	BUZZER OR BELL (ALARM)
(T/T)	TEMPERATURE SENSOR OR CONTROLLER
	FLOAT SWITCH
	SAIL SWITCH
	7 DAY TIME CLOCK
EP	ELECTRIC/PNEUMATIC (E.P.) SWITCH
PE	PNEUMATIC/ELECTRIC (P.E.) SWITCH
	PNEUMATIC OPERATOR
	PNEUMATIC RELAY
	ELECTRIC RELAY
	PRESSURE SELECTOR
	CHANGEOVER SWITCH
	DUCT MOUNTED SMOKE DETECTOR
	3-WAY WATER VALVE W/PILOT POSITIONER
F	FIRESTAT
R	RELAY
M	MOTORIZED OPERATOR
S	SOLENOID OPERATOR
	PNEUMATIC OPERATOR
	TWO-WAY VALVE
	THREE-WAY VALVE
	ELECTRIC CONNECTION
	PNEUMATIC CONNECTION
	THERMAL CUT-OUT
(P)	PILOT POSITIONER
(M)	MOTOR OPERATED DAMPERS
	CONTROL POINT
(E)	ENTHALPY SENSOR
(R)	PNEUMATIC RELAY

Revision	Date

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Drawing Title

Mechanical Controls

Approved:

Project Title

RENOVATE 3K FOR MENTAL HEALTH O/P CLINICS

Location

G.V. (SONNY) MONTGOMERY VA MEDICAL CENTER

Date

03/09/2012

100% SUBMISSION

Project Number

586-09-114

Building Number

3K

Drawing Number

MH-08

G.V. (SONNY) MONTGOMERY VA MEDICAL CENTER
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